



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,236	12/22/2003	Pazhayannur Ramanathan Subramanian	135957-1	6980
6147	7590	01/30/2007	EXAMINER	
GENERAL ELECTRIC COMPANY GLOBAL RESEARCH PATENT DOCKET RM. BLDG. K1-4A59 NISKAYUNA, NY 12309			WYSZOMIERSKI, GEORGE P	
			ART UNIT	PAPER NUMBER
			1742	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/30/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/743,236	SUBRAMANIAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	George P. Wyszomierski	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

- 1) Responsive to communication(s) filed on 22 December 2006.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

- 4) Claim(s) 1,2,4-10,12-16,18-24 and 26-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1,2,4-10,13-16,18-24 and 27-34 is/are rejected.
- 7) Claim(s) 12 and 26 is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

Art Unit: 1742

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4-10, 13-16, 18-24, and 27-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada et al. (PG Pub. 2006/0048866).

Takada et al. discloses a molybdenum alloy material containing fine carbide, oxide, or boride particles. With respect to instant claims 9 and 23, while Takada does not specify the volume percentage range presently claimed, materials having the claimed amount of particles would fall within the purview of those disclosed by Takada. With respect to instant claims 10 and 24, while Takada does not specify the strength of the prior art material, it can be assumed that this material would possess a strength as claimed because the actual materials are the same in the prior art and the claimed invention. With respect to instant claims 13, 14, 27 and 28, the prior art particles are held to be "substantially" spherical or ellipsoidal, in the absence of any specific definition of these terms.

Takada does not specify that the carbide, oxide or boride particles are "nanoparticles" as required by the instant claims, does not disclose the "X-ray target substrate" as required by instant claim 1, does not specify the volume percentage of particles presently claimed, and does not specify the process steps recited in product-by-process terms in claims 29-33. These differences are not seen as resulting in a patentable distinction between the prior art and the claimed invention because:

a) Takada does not in any way limit the size of the carbide, boride or oxide particles, and materials in which these particles are of a size that would fall within the definition of the word

“nanoparticles” or are of the specific dimensions as recited in claims 7, 8, 21 or 22 are thus within the purview of the Takada disclosure.

b) With regard to the X-ray target, it would appear from the present specification that this feature of the invention merely refers to a material to which an X-ray target can be attached, i.e. no actual production or use of X-rays is required by the instant claims. Thus, no patentable distinction is seen in this aspect of the invention.

c) With respect to the volume percentages, materials having the presently claimed percentage fall within the purview of the materials of Takada.

d) The process steps are not seen as resulting in a patentable distinction between the prior art and the claimed invention because a product-by-process claims defines a product. If the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process; see *In re Thorpe* (227 USPQ 964, Fed.Cir. 1985). The burden then shifts to Applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product; see *In re Marosi* (218 USPQ 289, Fed.Cir. 1983). In the present case, Applicant has not met this burden.

Consequently, a *prima facie* case of obviousness is established between the disclosure of Takada et al. and the presently claimed invention.

3. In a response filed December 22, 2006, Applicant contends that because Takada refers to nitride “nanoparticles” but simply calls the carbide, oxide or boride particles “fine” particles, then the latter particles must not be nanoparticles. Applicant’s arguments have been carefully considered, but are not persuasive of patentability because it is not clear what particular numerical size ranges(s) would define the term

Art Unit: 1742

“nanoparticles”. Further, as admitted by applicant, nothing is ever mentioned in Takada as to the size of the carbide, oxide or boride particles. It is therefore the examiner’s position that the Takada disclosure includes embodiments in which these particles are of a size that would be considered to be nanoparticles within the limitations of the instant claims.

Applicant’s arguments with respect to the previously applied Inoue et al. reference are persuasive; nothing in Inoue appears to disclose or suggest a molybdenum-based nanocomposite.

4. Claims 12 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not disclose or suggest a material as claimed and which is thermally stable at up to 2000.deg.C, i.e. the highest disclosed usable temperature of the Takada material is 1800.deg.C.

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

Art Unit: 1742

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Wyszomierski whose telephone number is (571) 272-1252. The examiner can normally be reached on Monday thru Friday from 8:00 a.m. to 4:30 p.m. Eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (571) 272-1244. All patent application related correspondence transmitted by facsimile must be directed to the central facsimile number, (571)-273-8300. This Central FAX Number is the result of relocating the Central FAX server to the Office's Alexandria, Virginia campus.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER  
GROUP 1700

GPW  
January 25, 2007